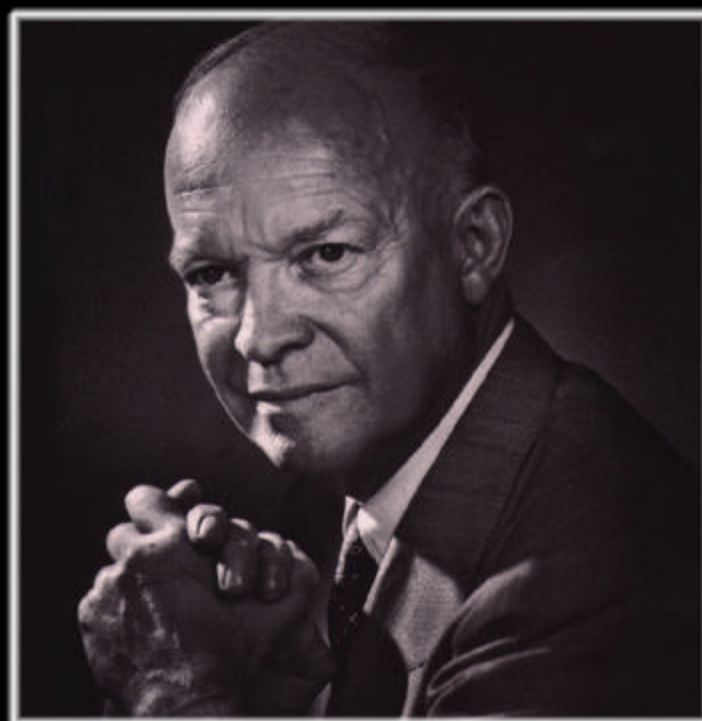
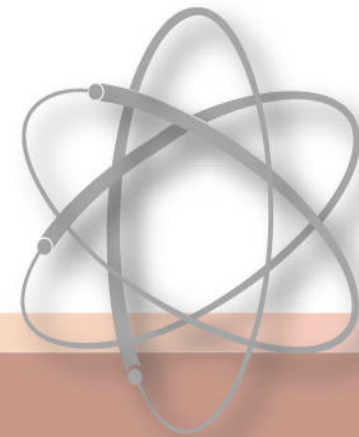




Atoms for Peace After 50 Years: The New Challenges and Opportunities

**"...to serve the needs rather
than the fears of mankind."**



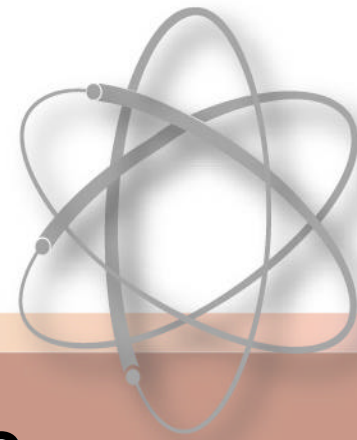


Atoms for Peace After 50 Years: The New Challenges & Opportunities

**Robert N. Schock
Symposium**

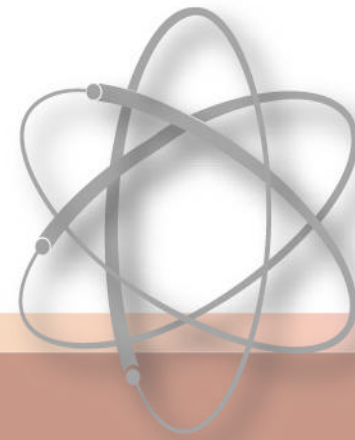
14 November 2003, LLNL

CGSR Process



- **Where is nuclear technology headed?**
- **Seek clarity, not consensus**
- **3 Workshops**
 - **200+ participants**
 - **Defense, Deterrence and Nonproliferation**
 - **Civilian Applications**
 - **Cross-Cutting Issues**
 - **Materials/Facilities;Governance;Public Confidence**
- **Conference**
- **Report (Rolling Text)**

LLNL Support



T Alberto

G Alonzo

R Budnitz

E Chandler

J-S Choi

D Christensen

C Hartmann-Siantar

T Isaacs

N Joeck

S Kim

K Kimball

M Mendelsohn

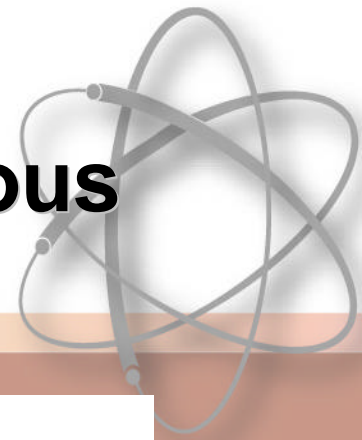
G Moore

C Poppe

C Smith

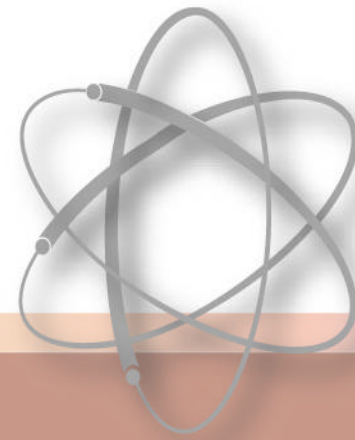
E Vergino

Nuclear technology future not obvious



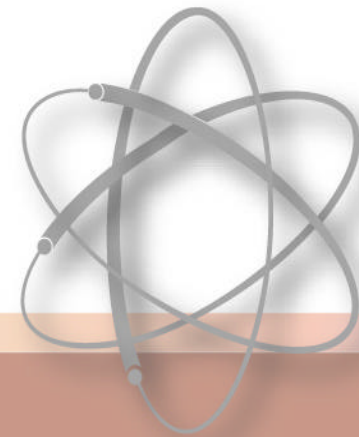
QuickTime™ and a
TIFF (Uncompressed) decompressor
are needed to see this picture.

An abundance of forces



- **Terrorism**
 - Threats increased
 - Response problematic
- **Int'l security architecture**
- **ACWs**
- **Timely and consensual NPT enforcement**
- **Security of Materials**
- **Interest in troubled regions**
- **Growing stocks of civilian N materials**
- **Lack of confidence in NP regime**
- **Cost of N Power**
- **Interest in N power in developing world**
- **Hostility toward N Power**
- **Climate change**
- **Growing enthusiasm for N medicine, agriculture, etc.**
- **Complex regulatory requirements**
- **Lack of understanding of the risks/benefits and their calculations and methods**

Catalytic Events



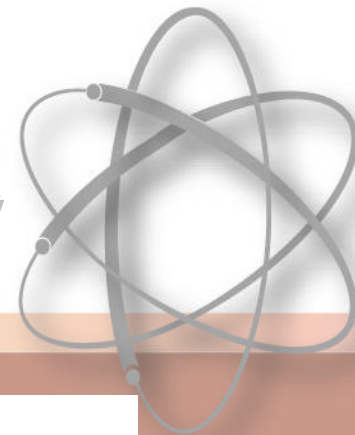
- **Use of a WMD or RDD somewhere**
- **Situations that compel the development of special-purpose nuclear weapons requiring nuclear testing**
- **Use of nuclear weapons in a regional conflict (S. Asia)**
- **The evolution of global terrorism & conflict in the M. East**
- **Breakout and nuclear-weapon programs in latent countries (Taiwan and Japan).**
- **A major nuclear accident on the scale of Chernobyl.**
- **A major loss of nuclear material or materiel.**
- **The loss of a nuclear submarine with a major release of radioactivity.**
- **Dramatic breakthrough in alternative sources of energy**
- **Dramatic and adverse changes in the climate.**



No consensus on details but some consistent threads

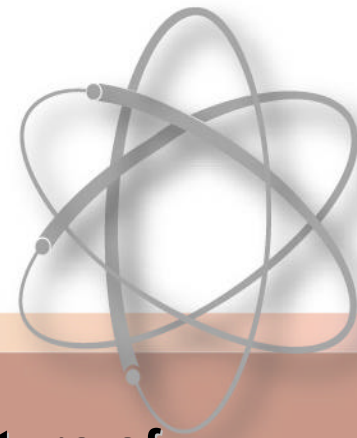
- **Goal is still security while maximizing civilian opportunities, the same as Eisenhower's**
- **Interrelated themes widely shared**
 - **Fundamentals of international security**
 - **Nonproliferation effectiveness and enforcement**
 - **Materials and facilities**
 - **Civilian opportunities**
 - **U.S. policy and technical leadership**
- **Involve complex technology and policy interrelationships and lead to recommendations**

Address International Security



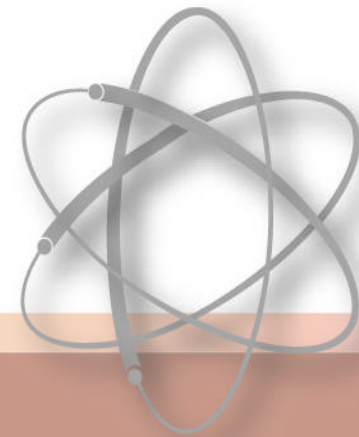
QuickTime™ and a
TIFF (Uncompressed) decompressor
are needed to see this picture.

International Security



- **Address foundations of international order, architecture of security institutions, sources of conflict, reactions to emerging threats**
 - Improve our understanding of what actually “assures, dissuades, deters, defends, defeats” adversaries, including non-state actors
- **Seek alternatives to nuclear weapons where possible / transform the stockpile to meet future needs**
- **Strengthen global and regional security networks**
 - Provide enhanced security and more effective sharing of the benefits of nuclear technology for nations that forgo WMD
 - Different views of “supply” side versus “demand” side
 - Concern about will of nations and/or UNSC

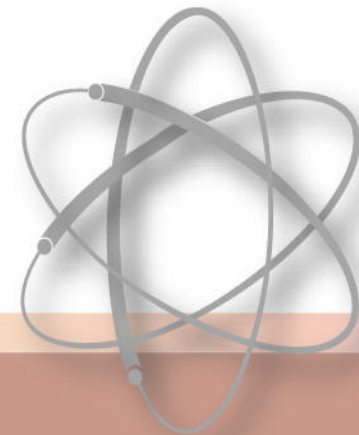
Nonproliferation Regime



- **Strengthen NPT fissile material regime**
 - Wider adherence to Additional Protocols on inspections
 - “Smarter” export controls & only to states adhering
- **Reliable enforcement the key to success**
- **Key NPT parties* better define obligations and privileges under NPT including:**
 - Indicators of potential violations
 - Steps to be taken if indicators appear
 - UNSC enforce current commitments
 - Clarify that states cannot escape obligations by invoking withdrawal clause “after the fact”

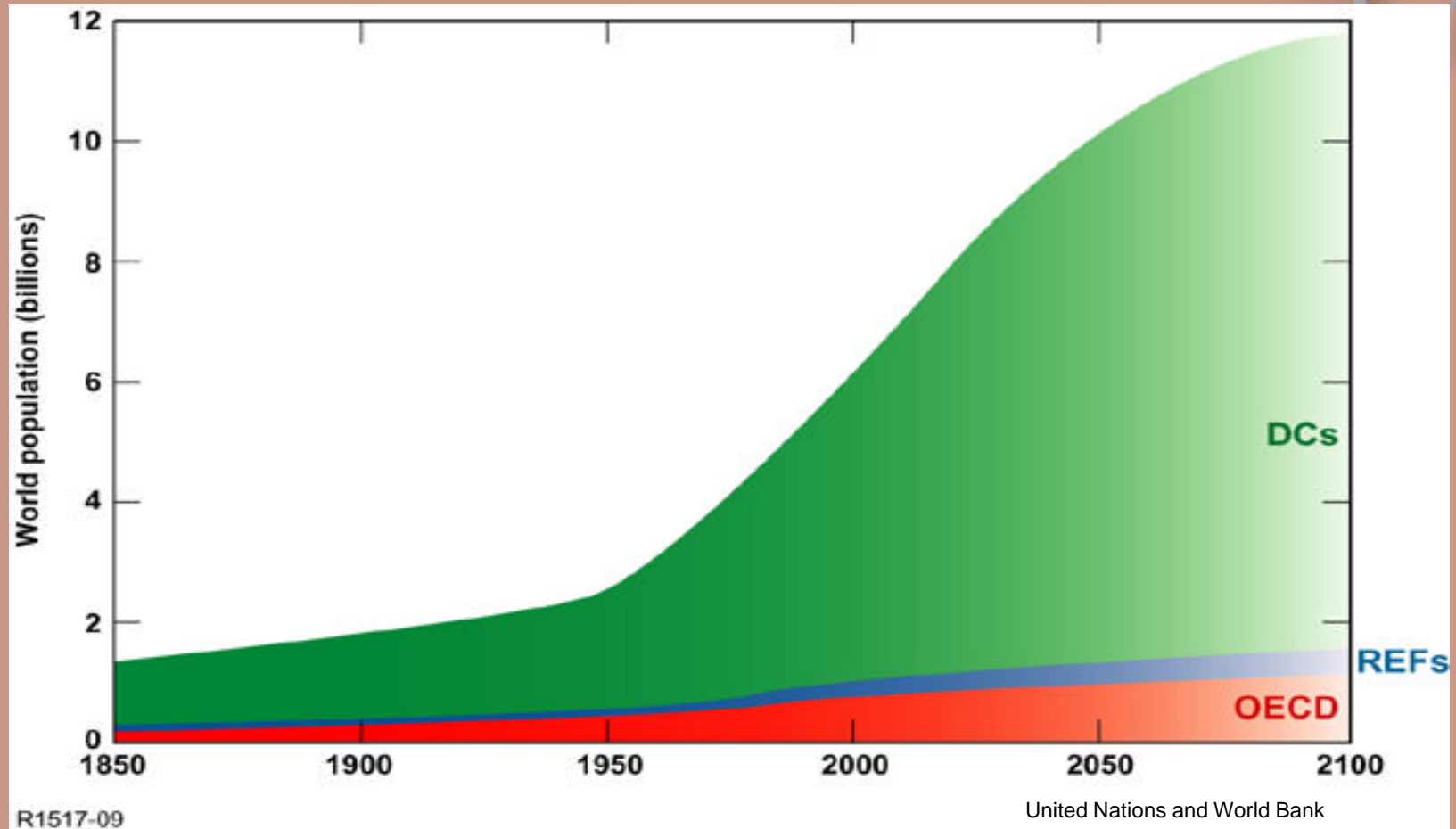
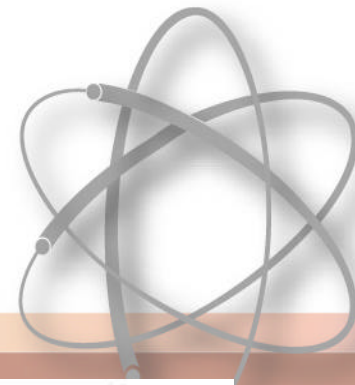
* Including Nuclear Suppliers Group

Materials and Facilities

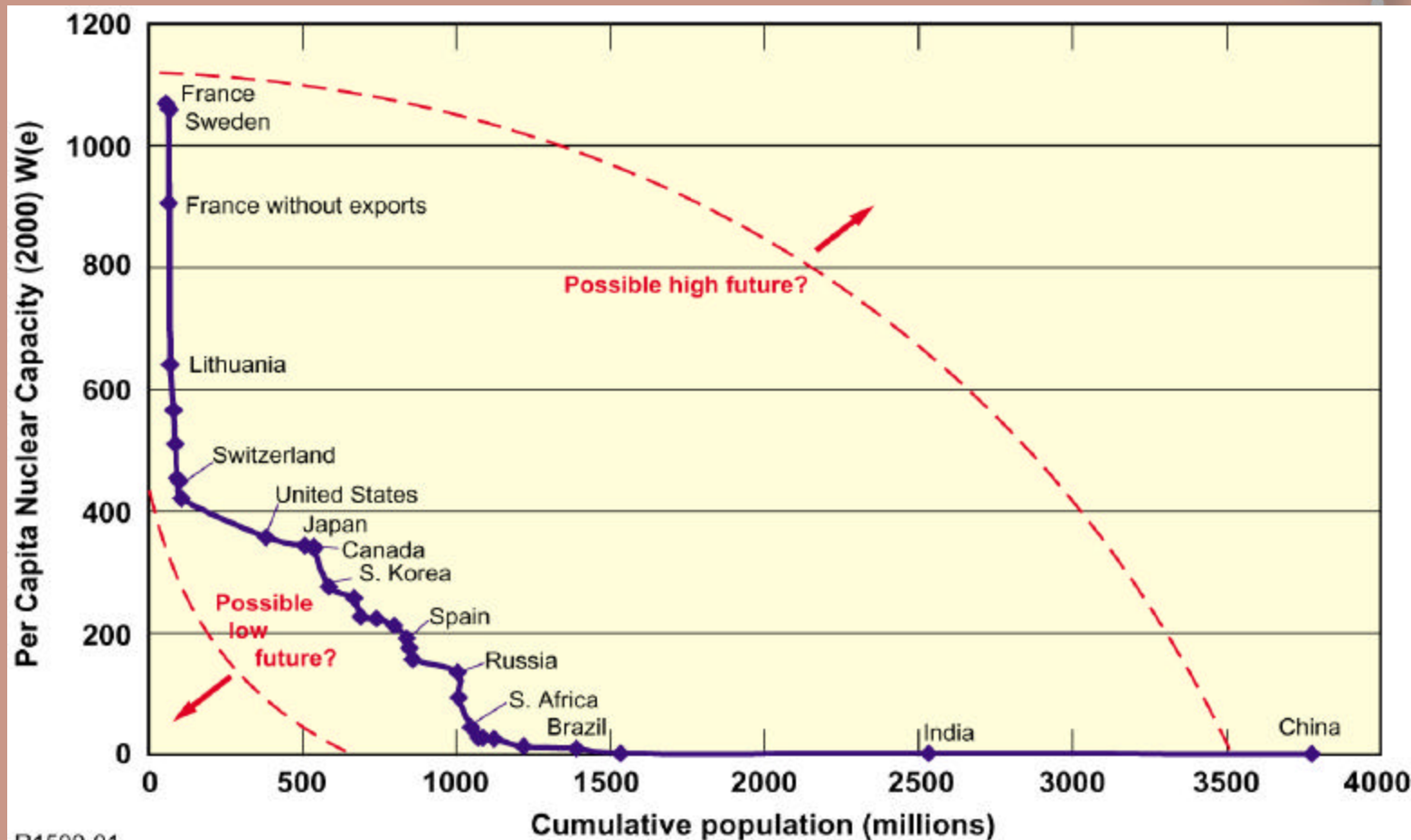
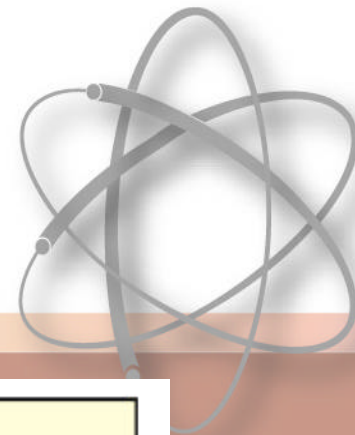


- **Control and Security of Weapon Usable Material**
 - First secure what's there
 - Then minimize the amount accessible
 - Particular concern over acquisition by terrorists
 - Strengthen worldwide MPC&A
 - Define and implement “best practices” of security & MPC&A
 - Especially for existing facilities that contain excess weapons material
 - Enhanced NTM intelligence gathering and sharing
 - Adopt and strengthen the Convention on Physical Protection
 - Accelerate the removal of HEU from civilian facilities
 - Expand IAEA role beyond monitoring declared materials to oversee management and control of civilian materials & facilities
 - Use latest 21st C. technologies* for safeguarding
 - requiring \$\$\$ & may involve difficult, time-consuming restructure

Population Projections



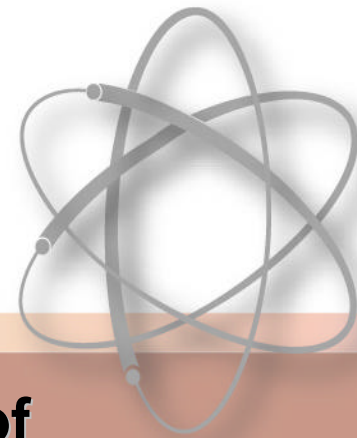
N. Power/cap vs. Population



R1590-01

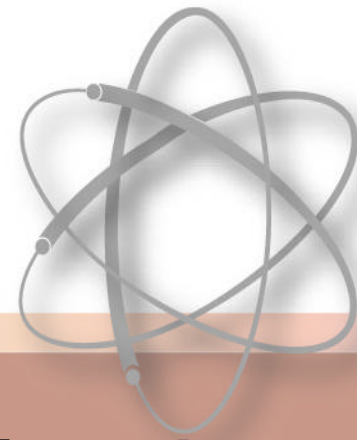
(Data Source: U.S. EIA, 2002)

Civilian Opportunities

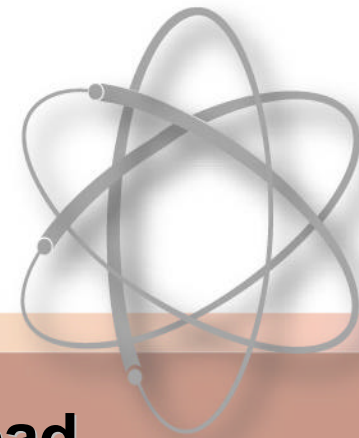


- **Better understanding of wide implications of technology options**
 - **Assess civilian opportunities in terms of comprehensive benefits & risks**
 - Power, medicine, agriculture, industry, research, defense vs. security, safety, environmental risks
 - Goal - a shared understanding with all interested parties
- **Define an international nuclear fuel-cycle program to meet user needs (cost, safety, etc.) and minimize the amount of weapons usable material**
- **More and better dialogue with public - assure that safety and security have weight in decisions**

U.S. Leadership



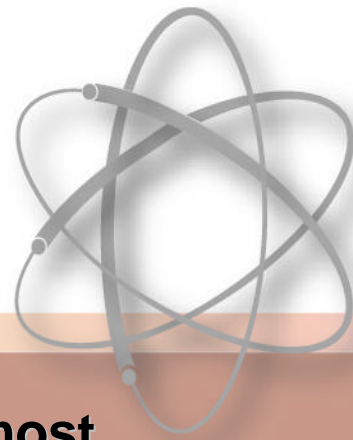
- **The importance U.S. leadership mentioned by all**
- **Communicate a bold comprehensive vision to include security, civilian opportunities, RD&D, risks and benefits**
 - **Vision speech such as Ike's**
 - **Senior official with sustained role to report on implementation of initiatives**



Summary

- **Nuclear technology is mature and widespread, with benefits from defense & energy to medicine, industry, agriculture, space, research, et al.**
 - but also risks (security & safety)
 - risks reasonable and manageable
- **Technological advances and diffusion will occur**
- **Marketplace will determine extent of civilian applications**
- **Governments will determine applications for defense and implement any security regime**
- **Benefits from both require urgent and continuing attention to security**

Eisenhower's Plan



1. **“Encourage world-wide investigation into the most effective peacetime uses of fissionable material”**
2. **“Begin to diminish the ... destructive power of the world's atomic stockpiles”**
3. **“See that the great powers ...are interested in human aspirations first rather than in building the armaments of war”**
4. **“Open up a new channel for peaceful discussion”**

Same plan today -

**Maximize Security while Ensuring that
Civilian Opportunities are Available**